

ABSTRACT OF THE DISCLOSURE

A hologram recording and reproducing apparatus performs to record data on a recording medium and reproduce data from the recording medium. The recording medium is made of a photorefractive crystal having a parallel plate shape. The apparatus includes: a support portion for detachably supporting and rotating the recording medium; a recording-reference-light-beam-supplying-portion for supplying a coherent recording reference light beam propagating along an optical axis to a major surface of the recording medium; a signal-light-beam-supplying-portion for supplying a coherent signal light beam which is modulated in accordance with image data, in an optical path into the recording medium such that the signal light beam intersects with the reference light beam to produce an optical interference pattern with the reference and signal light beams within the recording medium; a reproducing-reference-light-beam-supplying-portion for supplying into the recording medium a coherent reproducing reference light beam propagating in an opposite direction along the optical axis of the recording reference light beam to generate a phase conjugation wave from a refractive-index grating of the light interference pattern; a splitting portion for splitting the phase conjugation wave from the optical path of the signal light beam to image a dot pattern with the phase conjugation wave; a photo-detecting portion for detecting the dot pattern imaged with the phase conjugation wave to reproduce the image data.